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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/964,916 | 09/27/2001 | Brian A. Batke | 110003.97605 | 3256 |
| 26710 | 7590 | 12/30/2004 | EXAMINER | |
| QUARLES & BRADY LLP 411 E. WISCONSIN AVENUE SUITE 2040 MILWAUKEE, WI 53202-4497 | | | | HOLLAR, ANDREA B |
| ART UNIT | | PAPER NUMBER | | |
| | | 2142 | | |

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|------------------------------|------------------------|---------------------|
| | 09/964,916 | BATKE ET AL. |
| Examiner | Art Unit | |
| | Andrea Hollar | 2142 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 27 September 2001.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-23 is/are rejected.

7) Claim(s) 3,8,10 and 18 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 03 June 2002 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/18/2001.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .
5) Notice of Informal Patent Application (PTO-152)
6) Other: ____ .

DETAILED ACTION***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 392. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification***Claim Objections***

Claim 3 is objected to because of the following informalities: "the control network communications module" lacks antecedence. Appropriate correction is required.

Claim 8 is objected to because of the following informalities: "the web server" lacks antecedence. Appropriate correction is required.

Claim 10 is objected to because of the following informalities: "the group" lacks antecedence. Appropriate correction is required.

Claim 18 is objected to because of the following informalities: "the communication of signals" lacks antecedence. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thibault in view of Stawikowski.

With respect to claim 1, Thibault discloses an industrial control system for controlling an industrial process comprising:

a plurality of control devices each of which contributes to the controlling of the controlled process (col. 3, line 60);

a web access interface (fig. 1, item 16) including an Internet interface (fig. 1, item 25a) and a control network interface (fig. 1, item 25b) wherein the control network interface is coupled to the plurality of control devices by way of a network (fig. 1, item 30), and wherein the Internet interface is capable of being coupled to a remote device (fig. 1, item 12) via the Internet (col. 4, lines 33-34), the web access interface executing:

an Internet communications program (fig. 1, item 25a) that receives an Internet signal having socket API data and formatted in accordance with a TCP/IP protocol, wherein the Internet communications program extracts the socket API data from the Internet signal and provides a socket API signal including the socket API data (col. 6, lines 50-53); and

a control network communications program (fig. 1, item 25b; col. 7, lines 1-2) that receives the socket API signal and transmits a network signal based upon the socket API signal to an appropriate one of the control devices in accordance with the Internet signal, wherein the socket API data is included within the network signal and processed at the one of the control devices (col. 6, lines 47-49).

Thibault does not disclose expressly that each control device includes a respective web server program and that the network signal is not formatted in accordance with the TCP/IP protocol.

Stawikowski teaches that automation equipment can include a web server to exchange (process) data (par. 3, lines 1-3; par. 19, lines 10-11). Stawikowski also teaches that the UDP/IP protocol can be used between automation equipment and control devices (par. 3, line 7).

Thibault and Stawikowski are analogous art because they are both from the same field of endeavor of networked automation equipment.

At the time of invention it would have been obvious to one of ordinary skill in the art to modify Thibault's system by allowing each process control apparatus and the server digital data processor to include a web server, as taught by Stawikowski. The motivation for doing so would have been to allow each process control apparatus to exchange data with the server digital data processor in a web-based fashion (par. 3, lines 2-4). It would also have been obvious to modify Thibault's system to use UDP/IP between the object manager and the control apparatus, as taught by Stawikowski. The motivation for doing this would have been to have less network overhead.

Therefore it would have been obvious to combine Stawikowski and Thibault for the benefit of web-based data exchange and less network overhead to obtain the invention as specified in claim 1.

With respect to claim 2, Thibault discloses that the control network communications program further receives an additional network signal from another of the control devices and provides an additional socket API signal based upon the additional network signal, wherein both the additional network signal and the additional socket API signal include application-level information; and wherein the Internet communications program receives the additional socket API signal and formats the additional socket API signal in accordance with the TCP/IP protocol for transmission over the Internet to an additional remote device (col. 6, lines 53-56).

With respect to claim 3, Thibault does not expressly disclose that the control communications module encodes the socket API data from the socket API signal with a second protocol different from the TCP/IP protocol, whereby the control devices can provide web functionality without the overhead of a TCP/IP stack.

Stawikowski teaches that the UDP/IP protocol can be used between automation equipment and control devices.

Thibault and Stawikowski are analogous art because they are both from the same field of endeavor of networked automation equipment.

At the time of invention, it would have been obvious to modify Thibault's system to use UDP/IP between the object manager and the control apparatus, as taught by Stawikowski. The motivation for doing this would have been to have less network overhead.

Therefore it would have been obvious to combine Stawikowski and Thibault for the benefit of web-based data exchange and less network overhead to obtain the invention as specified in claim 3.

With respect to claim 8, Thibault does not expressly disclose that the web server implements at least one of an HTTP, an FTP, an SMTP, a Telnet command, a DNS command, and a WINS command based upon the socket API data.

Stawikowski teaches that a web server used in automation equipment can use an HTTP command (par. 25, lines 1-4).

Thibault and Stawikowski are analogous art because they are both from the same field of endeavor of networked automation equipment.

At the time of invention, it would have been obvious to one of ordinary skill in the art that if Thibault's system is modified as described in claim 1 to utilize web servers, one could also modify Thibault's system to use an HTTP command, as taught by Stawikowski. The motivation for doing so would have been to allow Thibault's system to exchange web-based data.

Therefore, it would have been obvious to combine Thibault with Stawikowski for the benefit of exchanging web-based data to obtain the invention as specified in claim 8.

With respect to claim 14, Thibault discloses that the Internet communications program and the control network communications program are comprised within a single translation module (fig. 1, item 16).

With respect to claims 15 and 16, Thibault does not disclose expressly that the control devices are control nodes each including a respective processor and that the respective processors are programmable logic controllers.

Stawikowski teaches that programmable logic controllers can be used as automation equipment in a remote process control system (par. 2, lines 1-2).

Thibault and Stawikowski are analogous art because they are both from the same field of endeavor of networked automation equipment.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault's system by allowing the specified process control apparatus to be a programmable logic controller, as taught by Stawikowski. The motivation for doing so would have been to allow Thibault's system to have a process control apparatus that can run a program in order to provide additional automation functions (par. 2, lines 6-8).

Therefore, it would have been obvious to combine Thibault with Stawikowski for the benefit of additional automation functions to obtain the invention as specified in claims 15 and 16.

With respect to claim 17, Thibault discloses that the control devices are I/O modules including processing devices (col. 3, lines 66-67 – col. 4, lines 1-2), and the web access interface includes a programmable logic controller (col. 4, lines 17-19).

With respect to claim 18, Thibault discloses a web access interface (fig. 1, item 16) for implementation in an industrial control system having a plurality of control devices (col. 3, line 60), the web access interface comprising:

a first means for receiving and transmitting Internet signals from and to the Internet (fig. 1, item 25a);

a second means for receiving and transmitting network signals from and to the plurality of control devices (fig. 1, item 25b); and

a third means for converting the Internet signals into the network signals, and for converting the network signals into the Internet signals, in order to allow for the communication of signals between the plurality of control devices and at least one remote device coupled to the first means by way of the Internet (col. 5, lines 49-50; col. 6, lines 50-56; and col. 4, lines 33-36),

wherein the Internet signals are formatted in accordance with an Internet-type protocol (col. 6, lines 50-53).

Thibault does not expressly disclose that each of the control devices has a respective web server program and that the network signals are not formatted in accordance with the Internet-type protocol.

Stawikowski teaches that automation equipment can include a web server to exchange (process) data (par. 3, lines 1-3; par. 19, lines 10-11). Stawikowski also teaches that the UDP/IP protocol can be used between automation equipment and control devices (par. 3, line 7).

Thibault and Stawikowski are analogous art because they are both from the same field of endeavor of networked automation equipment.

At the time of invention it would have been obvious to one of ordinary skill in the art to modify Thibault's system by allowing each process control apparatus and the server digital data processor to include a web server, as taught by Stawikowski. The motivation for doing so would have been to allow each process control apparatus to exchange data with the server digital data processor in a web-based fashion (par. 3, lines 2-4). It would also have been obvious to modify Thibault's system to use UDP/IP between the object manager and the control apparatus, as taught by Stawikowski. The motivation for doing this would have been to have less network overhead.

Therefore it would have been obvious to combine Stawikowski and Thibault for the benefit of web-based data exchange and less network overhead to obtain the invention as specified in claim 18.

With respect to claim 19, Thibault discloses that the second means includes at least one port, and wherein the one port includes at least one communication link coupling the port with one of the control devices (fig. 1, items 25c, 30, and 23a).

Claims 4-7, 9-11, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thibault in view of Stawikowski as applied to claims 1, 18, and 19 above, and further in view of Kastner.

With respect to claims 4 and 5, Thibault and Stawikowski do not expressly disclose that the Internet communications program includes a first software program for processing an Internet media access control protocol with respect to the Internet signal and that the Internet media access control protocol is one of an Ethernet protocol, a Token Ring, protocol, a FDDI protocol, an ATM protocol, a SONET protocol, an X.25 protocol, and a frame relay protocol.

Kastner teaches that Ethernet can be used to communicate between two computing devices (col. 6, lines 1-5).

Thibault, Stawikowski, and Kastner are all analogous art because they are from the same field of endeavor of remote industrial control systems.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to use Ethernet to communicate between the client and command processor, as taught by Kastner. The motivation for doing so would have been to enable Thibault and Stawikowski's system to use standard Ethernet components that are widely available (col. 6, lines 6-8).

Therefore it would have been obvious to combine Kastner with Thibault and Stawikowski for the benefit of widely available standard components to obtain the invention as specified in claims 4 and 5.

With respect to claim 6, Thibault discloses that the Internet communications program includes a second software program for processing an IP protocol with respect to the Internet signal, wherein the processing includes obtaining an IP address (col. 6, lines 50-53). If IP is being used, it is inherent that an IP address is being obtained because both the source and destination IP addresses are contained in the header of an IP packet (Stevens, page 34, fig. 3.1).

With respect to claim 7, Thibault discloses that the Internet communications program includes a third software program for processing a TCP protocol with respect to the Internet signal (col. 4, lines 43-47).

With respect to claims 9 and 10, Thibault and Stawikowski do not expressly disclose that the control network communications program includes a first program for formatting the socket API signal in accordance with an internal media access protocol and that the internal media access control protocol is selected from the group consisting of a DeviceNet protocol, a ControlNet protocol, and an Ethernet protocol.

Kastner teaches that an Ethernet protocol can be used to communicate signals between a control device and an operating unit (col. 6, lines 1-5).

Thibault, Stawikowski, and Kastner are all analogous art because they are from the same field of endeavor of remote industrial control systems.

At the time of invention it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to utilize Ethernet for communication between the process control

apparatus and the object manager, as taught by Kastner. The motivation for doing so would have been to be able to use standard Ethernet equipment that is readily available (col. 6, lines 6-8).

Therefore, it would have been obvious to combine Kastner with Thibault and Stawikowski for the benefit of standard equipment that is readily available to obtain the inventions specified in claims 9 and 10.

With respect to claim 11, Thibault and Stawikowski do not disclose expressly that the control network communications program includes a second program for formatting the socket API signal, as formatted in accordance with the internal media access protocol, also in accordance with a control network protocol.

Kastner teaches that HTTP can be used to transmit information between a control device and an operating unit (col. 6, lines 64-66).

Thibault, Stawikowski, and Kastner are all analogous art because they are from the same field of endeavor of remote industrial control systems.

At the time of invention, it would have been obvious that one could modify Thibault and Stawikowski's system to use HTTP to communicate between the control apparatus and the object manager, as taught by Kastner. The motivation for doing so would have been to allow Thibault and Stawikowski's system to exchange web-based data.

Therefore it would have been obvious to combine Kastner with Thibault and Stawikowski for the benefit of exchanging web-based data to obtain the invention as specified in claim 11.

With respect to claim 20, Thibault discloses that the third means includes programs allowing for processing and formatting in accordance with an Internet communications protocol (col. 4, lines 43-47).

Thibault and Stawikowski do not expressly disclose that the set of programs allows for processing and formatting in accordance with an Internet media access control protocol, a control network protocol, and an internal media access control protocol.

Kastner teaches that Ethernet can be used to communicate between two computing devices (col. 6, lines 1-5), that HTTP can be used to transmit information between a control device and an operating

unit (col. 6, lines 64-66), and that Ethernet can be used to communicate signals between a control device and an operating unit (col. 6, lines 1-5).

Thibault, Stawikowski, and Kastner are all analogous art because they are from the same field of endeavor of remote industrial control systems.

At the time of invention, it would have been obvious to modify Thibault and Stawikowski's system to use Ethernet to communicate between the client and the command processor, as taught by Kastner. The motivation for doing so would have been to enable Thibault and Stawikowski's system to utilize standard Ethernet components that are readily available (col. 6, lines 6-8).

At the time of invention, it would have been obvious to modify Thibault and Stawikowski's system to use HTTP to communicate between the control apparatus and the object manager, as taught by Kastner. The motivation for doing so would have been to allow Thibault and Stawikowski's system to exchange web-based data.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to utilize Ethernet for communications between the process control apparatus and the object manager, as taught by Kastner. The motivation for doing so would have been to enable Thibault and Stawikowski's system to use standard Ethernet equipment that is readily available (col. 6, lines 6-8).

Therefore it would have been obvious to combine Kastner with Thibault and Stawikowski for the benefit of standard components and the ability to exchange web-based data to obtain the invention as specified in claim 20.

With respect to claim 21, Thibault discloses a method of communicating information between a plurality of control devices (col. 3, line 60) within an industrial control system and a remote device (fig. 1, item 12) coupled to the industrial control system by way of the Internet (fig. 1, item 18; col. 4, lines 33-34), the method comprising:

receiving a request signal (col. 6, lines 46-47) at a web access interface (fig. 1, item 16), wherein the request signal has been provided over the Internet (col. 4, lines 33-34) from the remote device (fig. 1, item 12);

processing a TCP/IP protocol with respect to the request signal by way of an Internet communications program (fig. 1, item 25a) of the web access interface, in order to extract socket API data in the form of a socket API signal (col. 6, lines 50-53);

determining an appropriate destination control device from among the plurality of control devices (col. 6, lines 27-33); and

delivering the network signal to the appropriate destination control device so that the socket API data can be processed by the respective web server program (col. 5, lines 49-50).

Thibault does not expressly disclose that each of the control devices has a respective web server program.

Stawikowski teaches that automation equipment can include a web server to exchange (process) data (par. 3, lines 1-3; par. 19, lines 10-11).

Thibault and Stawikowski are analogous art because they are from the same field of endeavor of remote industrial control systems.

At the time of invention it would have been obvious to one of ordinary skill in the art to modify Thibault's system by allowing each process control apparatus and the server digital data processor to include a web server, as taught by Stawikowski. The motivation for doing so would have been to allow each process control apparatus to exchange data with the server digital data processor in a web-based fashion (par. 3, lines 2-4).

Thibault and Stawikowski do not expressly disclose that the method comprises processing an Internet media access control protocol and formatting the socket API signal in accordance with a control network protocol and an internal media access control protocol to produce a network signal.

Kastner teaches that Ethernet can be used to communicate between two computing devices (col. 6, lines 1-5) and that HTTP can be used to transmit information between a control device and an operating unit (col. 6, lines 64-66) and that Ethernet can be used to communicate signals between a control device and an operating unit (col. 6, lines 1-5).

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to use Ethernet to communicate between the client and the command

processor, as taught by Kastner. The motivation for doing so would have been to enable Thibault and Stawikowski's system to utilize standard Ethernet components that are readily available (col. 6, lines 6-8).

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to use HTTP to communicate between the control apparatus and the object manager, as taught by Kastner. The motivation for doing so would have been to allow Thibault and Stawikowski's system to exchange web-based data.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to utilize Ethernet for communications between the process control apparatus and the object manager, as taught by Kastner. The motivation for doing so would have been to enable Thibault and Stawikowski's system to use standard Ethernet equipment that is readily available (col. 6, lines 6-8).

Therefore it would have been obvious to combine Thibault and Stawikowski and Kastner for the benefit of standard components and the ability to exchange web-based data to obtain the invention as specified in claim 21.

With respect to claim 22, Thibault discloses providing an additional network signal from one of the plurality of control devices to the web access interface, wherein the additional network signal includes additional socket API data; processing the additional network signal with respect to the control network protocol and the internal media access control protocol to produce an additional socket API signal; formatting the additional socket API signal in accordance with the TCP/IP protocol and the Internet media access control protocol to generate an Internet signal; and providing the Internet signal onto the Internet for transmission to an additional remote device (col. 6, lines 53-56).

With respect to claim 23, Thibault discloses that the Internet signal is transmitted as a series of separate data packets (col. 6, line 51).

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thibault in view of Stawikowski as applied to claim 1 above, and further in view of Kalajan.

With respect to claims 12 and 13, Thibault and Stawikowski do not expressly disclose that the web access interface includes a table for converting IP address information to control network addresses

corresponding to the plurality of control devices, and wherein, upon receiving the Internet signal at the web access interface, the web access interface determines the appropriate one of the control devices to receive the socket API data based upon an IP address within the Internet signal and that the table converts at least one of IP addresses to control network addresses and IP addresses plus port addresses to control network addresses.

Kalajan teaches that a table can be used to convert IP address information to network resource addresses and to determine which device should receive the data (col. 2, lines 39-41, 45-48, and 50-52).

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Thibault and Stawikowski's system to include a table within the server digital data processor to convert IP address information to network resource addresses and to determine which device should receive the data, as taught by Kalajan. The motivation for doing so would have been to provide a more efficient way to distribute information than the broadcast method Thibault's system uses.

Therefore it would have been obvious to combine Kalajan with Thibault and Stawikowski for the benefit of more efficient information distribution to obtain the invention as specified in claims 12 and 13.

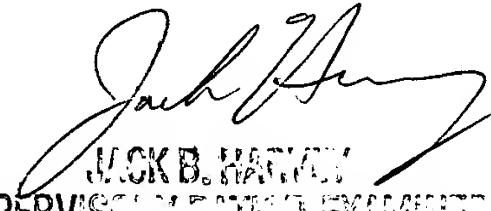
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrea Hollar whose telephone number is (571) 272-5862. The examiner can normally be reached on 8:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack B. Harvey can be reached on (571) 272-3896. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ABH



JACK B. HARVEY
SUPERVISORY PATENT EXAMINER